



Australian Bureau of Statistics

Education Services

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Resources



MAT 03 – Factors of Population Change

You can download this activity, the teacher solutions and the assessment rubric as a rich text file (RTF) at the bottom of the page.

Subject Area

Mathematics

Overview

In this activity, students consider the components of population change. Students calculate natural increase and net overseas migration figures and the contribution each makes to Australia's population growth.

Requirements

- Access to CAS calculators or Excel
- Copy of student worksheet

Instructions

Factors of Population Change

Overview - Components of Population Change

The growth of Australia's population has two components: natural increase (the number of births minus the number of deaths) and net overseas migration (the difference between the number of incoming travellers and the number of outgoing travellers). This activity involves looking at the contribution of each of these components in Australia's population growth for the period 2006 - 2010.

Task One: Births and Deaths

Look at the Population Change Summary, for Australia below.

Year	Components of population change	
	Births '000	Deaths '000
2006	268.5	134.5
2007	285.3	139.8
2008	294.1	142.5
2009	295.3	141.6
2010	289.5	143.4

Table 1A: Population Change Summary, Australia

(cat. no. 3101.0 Australian Demographic Statistics, Sept 2011, Publication PDF, Table 1)

1. Use the births and deaths data in figure 1 to create a side by side bar graph comparing births and deaths for each year from 2006-2010. Choose your scale and label your graph carefully.

2. Births

a) Based on the data contained in table 1 and your graph, what trends or patterns do you observe in the number of births from 2006 - 2010.

b) Identify when the smallest and largest increases or decreases and the size of these movements.

c) Can you suggest possible reasons for these trends (or patterns)?

3. Deaths

a) Based on the data contained in table 1 and your graph, what trends or patterns do you observe in the number of deaths from 2006 - 2010.

b) Identify when the smallest and largest increases or decreases and the size of these movements.

c) Can you suggest possible reasons for any trends (or patterns)?

Task Two: Natural Population Increase (Births – Deaths)

4. a) Complete column 4 'Natural increase '000 in table 1B by subtracting the number of deaths from the number of births.

Year	Components of population change		
	Births '000	Deaths '000	Natural Increase '000
2006	268.5	134.5	
2007	285.3	139.8	
2008	294.1	142.5	
2009	295.3	141.6	
2010	289.5	143.4	

Table 1B: Population Change Summary, Australia

b) Show this increase in a line graph.

c) What trends or patterns can you observe?

d) In which year was the rate of increase greatest? In which year was the rate of increase the smallest? Use your observations to list some possible implications of any trends (or patterns) you notice in the natural population increase over this time.

Task Three: Total Population Growth (NI + NOM)

5. The table below includes migration figures for 2006 – 2010. Starting with the figures for 2006, show:

a) the estimated population for all years by factoring in births, deaths and migration (column 6)

b) the increase in population each year in '000s (column 7) and,

c) the % increase each year (column 8)

Year	Components of population change				Population			Note: population estimates and their components have sometimes been rounded. Rounded figures and unrounded figures should not be assumed to be accurate to the last digit shown. Where figures have been rounded, discrepancies may
	Births '000	Deaths '000	Natural increase (NI) '000	Net overseas migration (NOM) '000	At end of period '000	Increase '000	Increase %	
2006	268.5	134.5	134.0	182.2	20,873.7	329.6	1.60	
2007	285.3	139.8	145.5	244.1				
2008	294.1	142.5	151.6	315.7				

2009	295.3	141.6	153.7	246.9				occur between sums of component items and totals.
2010	289.5	143.4	146.0	168.8				

Table 2: PERCENTAGE Population Change

6. Use a line graph to show how the population has changed over this period. Comment on what is shown.

7. Use a line graph to show how the net overseas migration has changed during this period. Comment on any trends.

8. In 2010 the contribution to population increase was higher for net overseas migration (54%) than for natural increase (46%). Complete the table below to see if the same applied for the years 2006 – 2010.

	Components of population change		Population			
Year	Natural increase	Net overseas migration (NOM)	At end of period	Increase	contribution of natural increase to overall increase	contribution of net annual migration to overall increase
	'000	'000	'000	'000	%	%
2006	134	182.2	20,873.70	329.60		
2007	145.5	244.1	21,263.30	389.60		
2008	151.6	315.7	21,730.60	467.30		
2009	153.7	246.9	22,131.20	400.60		
2010	146	168.8	22,446.00	314.90	46.36%	53.60%

Table 3: Contribution to Population Change

9. In small groups of 3–4, discuss why it might be important for the Australian Government to encourage migrants to come to Australia. Write your answers below.

Downloads

Student Worksheet

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Assessment Rubric

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